

1 We claim:

2 1. A composition comprising:

3 a targeting agent conjugated to a functional moiety, wherein the targeting
4 agent selectively binds to a VECSM Group II or Group III polypeptide.

5 2. The composition of claim 1, wherein the polypeptide is a VECSM Group III
6 polypeptide.

7 3. The composition of claim 1, wherein the targeting agent comprises an antibody, an
8 antigen-binding antibody fragment, or a ligand that specifically binds to the
9 polypeptide.

10 4. The composition of claim 1, wherein the functional moiety comprises a therapeutic
11 or cytotoxic agent.

12 5. The composition of claim 1, wherein the functional moiety comprises an
13 angiogenesis inhibitor or a stimulator of angiogenesis.

14 6. The composition of claim 1, wherein the functional moiety comprises a
15 radiosensitizing agent or an imaging agent.

16 7. The composition of claim 1, wherein the agent is a paramagnetic, radioactive or
17 fluorogenic ion.

18 8. The composition of claim 7, wherein the agent is selected from the group consisting
19 of: chromium (III), manganese (II), iron (III), iron (II), cobalt (II), nickel (II), copper
20 (II), neodymium (III), samarium (III), ytterbium (III), gadolinium (III), vanadium
21 (II), terbium (III), dysprosium (III), holmium (III), europium, and erbium (III),
22 iodine¹²³, technetium^{99m}, indium¹¹¹, rhenium¹⁸⁸, rhenium¹⁸⁶, copper⁶⁷, iodine¹³¹,
23 yttrium⁹⁰, iodine¹²⁵, astatine²¹¹, and gallium⁶⁷, lanthanum (III), gold (III), lead (II),
24 and bismuth (III).

25 9. An agent that reduces expression of a VECSM Group II or Group III polynucleotide.

- 1 10. The agent of claim 9, wherein the agent comprises an siRNA or shRNA targeted to a
2 VECSM Group II or Group III polynucleotide.
- 3 11. The agent of claim 9, wherein the agent comprises an antisense molecule that
4 specifically binds to and inhibits a VECSM Group II or Group III polynucleotide.
- 5 12. The agent of claim 9, wherein the agent comprises a ribozyme that cleaves a
6 VECSM Group II or Group III polynucleotide.
- 7 13. A method of inhibiting expression of a VECSM Group II or Group III polypeptide in
8 a cell or a subject comprising delivering the agent of claim 9 to the cell or subject.
- 9 14. A method of treating a condition comprising steps of:
10 (i) providing a subject in need of treatment for the condition; and
11 (ii) administering a pharmaceutical composition comprising the agent of
12 claim 9 to the subject, thereby alleviating the condition.
- 13 15. The method of claim 14, wherein the condition is associated with inappropriate or
14 excessive vascular endothelial growth.
- 15 16. The method of claim 14, wherein the condition is associated with a reduced or
16 inadequate blood supply.
- 17 17. An antibody or antibody fragment that specifically binds to a VECSM Group II or
18 Group III polypeptide, wherein the antibody detects expression of the polypeptide in
19 endothelial cells.
- 20 18. A method of treating a condition comprising steps of:
21 (i) providing a subject in need of treatment for the condition; and
22 (ii) administering a pharmaceutical composition comprising the antibody of
23 claim 17 to the subject, thereby alleviating the condition.
- 24 19. The method of claim 18, wherein the condition is associated with inappropriate or
25 excessive vascular endothelial growth.
- 26 20. The method of claim 18, wherein the condition is associated with a reduced or
27 inadequate blood supply.

- 1 21. A method for detecting or quantifying vascularization or angiogenic activity in a
2 biological sample or subject comprising:
3 determining the level of expression of a naturally occurring VECSM Group II
4 or Group III polynucleotide in the biological sample or subject, or determining the
5 level of expression of a naturally occurring polypeptide encoded by such a
6 polynucleotide in the biological sample or subject.
- 7 22. The method of claim 21, wherein the biological sample is a tumor sample.
- 8 23. A method of imaging angiogenesis, vasculature, or body tissue comprising
9 endothelial cells in a biological sample or subject, comprising steps of:
10 (i) administering to the biological sample or subject an effective amount of a
11 targeting agent that specifically binds to a VECSM Group II or Group III
12 polypeptide, wherein the targeting agent is linked to a functional moiety that
13 enhances detectability of endothelial cells by an imaging procedure; and
14 (ii) subjecting the biological sample or subject to the imaging procedure.
- 15 24. The method of claim 23, wherein the subject suffers from a condition associated with
16 excessive or inappropriate vascular tissue or a condition associated with reduced or
17 inadequate blood supply.
- 18 25. A method of targeting a molecule selectively to an endothelial cell or to vascular
19 endothelium in a subject comprising steps of:
20 (i) conjugating the molecule to an antibody or ligand that specifically binds to
21 a VECSM Group II or Group III polypeptide to form a conjugate or associating the
22 molecule with a delivery vehicle, wherein the delivery vehicle comprises a targeting
23 agent that specifically binds to a VECSM Group II or III polypeptide; and
24 (ii) administering the conjugate or the delivery vehicle with the associated
25 molecule to the cell or subject.
- 26 26. A method of inhibiting angiogenesis or of inhibiting tumor growth or tumor survival
27 in a subject comprising steps of:
28 (a) providing a subject having a condition characterized by excessive or
29 inappropriate angiogenesis or having a tumor; and
30 (b) administering a composition comprising

(i) a targeting agent that specifically binds to a VECSM Group II or Group III polypeptide; and

(ii) a functional moiety, wherein the functional moiety comprises an angiogenesis inhibitor or a cytotoxic moiety, to the subject, thereby inhibiting angiogenesis, tumor growth, tumor metastasis, or tumor survival in the subject..

27. A method of stimulating angiogenesis in a subject comprising steps of:

(a) providing a subject having a condition characterized by an inadequate blood supply to one or more organs or tissues; and

(b) administering a composition comprising

(i) a targeting agent that specifically binds to a VECSM Group II or Group III polypeptide; and

(ii) a functional moiety, wherein the functional moiety comprises a stimulator of angiogenesis, to the subject, thereby stimulating angiogenesis in the subject.

28. A method for identifying a compound comprising steps of:

(i) providing a biological sample comprising cells that express a VECSM Group II or Group III polypeptide;

(ii) contacting the cells with the compound; and

(iii) determining whether the level of expression or activity of the VECSM polynucleotide or polypeptide in the presence of the compound is increased or decreased relative to the level of expression or activity of the VECSM polynucleotide or polypeptide in the absence of the compound; and

(iv) identifying the compound as a modulator of the VECSM polynucleotide or polypeptide if the level of expression or activity of the VECSM polynucleotide or polypeptide is higher or lower in the presence of the compound relative to its level of expression or activity in the absence of the compound.

29. A compound identified according to the method of claim 28.

30. A method of treating a subject suffering from a disease or clinical condition comprising steps of:

(i) providing a subject suffering from the disease or clinical condition associated with inappropriate or excessive angiogenesis or vascular endothelial growth; and

(ii) administering the compound of claim 29 to the subject.

31. The method of claim 30, wherein the condition is associated with inappropriate or excessive vascular endothelial growth.

32. The method of claim 30, wherein the condition is associated with a reduced or inadequate blood supply.